REMARKS

Agent for Applicant presents original claims 2-9, 15, 18-19 and 22-31; previously amended claims 1, 10-14, 16, 17 and 21; and currently amended claims 20 and 32 for reconsideration by the Examiner.

Claim Withdrawals

The Examiner stated that claims 33 to 48 were withdrawn from consideration as being directed to a non-elected invention pursuant to 37 CFR 1.142(b) and MPEP § 821.03.

Agent for Applicant acknowledges the Examiner's statement that claims 33 to 48 are withdrawn from consideration. No comment on claims 33 to 48 is therefore made at this time, without prejudice to later filing a continuation application claiming priority to the present application and/or later arguing that the claims 33 to 48 do not relate to a materially different process.

Claim Rejections and Claim Amendments

Lacking Patentable Utility

Claims 4-8 and 24-28

The Examiner stated that claims 4-8 and 24-28 were rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. More specifically, the Examiner stated:

> Claim 4 cited a "data matrix having a row and a column for each variable." Such a limitation creates an identity matrix where the input is identical to the output since the same variable represents both a row and a column. Hence the "knowledge entity accumulation of combination of knowledge elements for each variable in the intersection of the corresponding row and column" will have no knowledge. Hence claim 4 has no utility or value...

Agent for Applicant respectfully submits that the Examiner's objection is based on a misunderstanding of what is meant by a "data matrix" in the present application. In the present application, a "data matrix" is not merely a listing of variable values and also is not an identity matrix. An example of a "data matrix" used in the present application is given at paragraph 40 of the specification, which presently reads:

- 11 -

[0040] The learner 44 transforms the collected data into the knowledge entity of FIG. 3 as each measurement is received. As can be seen in FIG. 3, the knowledge entity 46 is organised as an orthogonal matrix having a row and a column for each of the sensed operating parameters. The intersection of each row and column defines a cell in which a set of combinations of the variable in the respective row and column is accumulated.

Figure 3 presently appears as follows:

	X_1	X_2	X_3	X_4
X_1	n_{11} $\sum X_1$ $\sum X_1$ $\sum X_1 X_1$	n_{12} $\sum X_1$ $\sum X_2$ $\sum X_1 X_2$	n_{13} $\sum X_1$ $\sum X_3$ $\sum X_1 X_3$	n_{14} $\sum X_1$ $\sum X_4$ $\sum X_1 X_4$
X_2	n_{21} $\sum X_2$ $\sum X_1$ $\sum X_2 X_1$	n_{22} $\sum X_2$ $\sum X_2$ $\sum X_2 X_2$	n_{23} $\sum X_2$ $\sum X_3$ $\sum X_2 X_3$	n_{24} $\sum X_2$ $\sum X_4$ $\sum X_2 X_4$
X_3	n_{31} $\sum X_3$ $\sum X_1$ $\sum X_3 X_1$	n_{32} $\sum X_3$ $\sum X_2$ $\sum X_3 X_2$	n_{33} $\sum X_3$ $\sum X_3$ $\sum X_3 X_3$	n_{34} $\sum X_3$ $\sum X_4$ $\sum X_3 X_4$
X_4	n_{41} $\sum X_4$ $\sum X_1$ $\sum X_4 X_1$	n_{42} $\sum X_4$ $\sum X_2$ $\sum X_4 X_2$	n_{43} $\sum X_4$ $\sum X_3$ $\sum X_4 X_3$	n_{44} $\sum X_4$ $\sum X_4$ $\sum X_4 X_4$

Figure 3

As can be seen in the above Figure 3, the data matrix may be neither merely a listing of variable values nor an identity matrix. Further examples in the description of data matrices implementing the knowledge entities of the present invention include Table 2 (referred to as paragraph 47 of the specification), Table 6 (referred to at paragraph 75), and Table 9 (referred to at paragraph 86 of the specification).

Therefore, Agent for Applicant respectfully submits that it is inaccurate that "knowledge entity accumulation of combination of knowledge elements for each variable in the intersection of the corresponding row and column" will have no knowledge. As such, claims 4-8 and 24-28 are in allowable form as they do not lack utility or value. The utility or value clearly resides in the ability to update the knowledge elements given the specific knowledge entity structure that is described, which is highly novel and unobvious.

Claim 32

- 12 -

The Examiner stated that claim 32 was rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. More specifically, the Examiner stated that limiting the method to "any miniaturized processor medium" preempts the idea of "miniaturized processor medium".

Agent for Applicant has amended claim 32 to remove the reference to "any miniaturized processor medium" in the above amended claims. Agent for Applicant respectfully submits that the claim no longer preempts ideas and, therefore, is now in allowable form.

Failure to Disclose Practical Application

The Examiner stated that claims 4-8, 24-28, and 20-21 were rejected under 35 U.S.C. 112. More specifically claims 4-8 and 24-28 were rejected because, as a matter of law, claims rejected under 35 U.S.C. 101 are also rejected under 35 U.S.C. 112.

Claims 4-8 and 24-28

Agent for Applicant submits that because of the above arguments under the heading "Lacking Patentable Utility", claims 4-8 and 24-28 are allowable under 35 U.S.C. 101 and, therefore, under 35 U.S.C. 112.

Claims 20-21

The Examiner stated that claims 20-21 were rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the Examiner noted that connecting the two claims by the term "and" rendered both claims indefinite.

Agent for Applicant has amended claim 20 such that claims 20 and 21 are no longer connected by the term "and". Agent for Applicant respectfully submits, therefore, that the claims are no longer indefinite and are now in allowable form.

Anticipation

The Examiner stated that claims 1-3, 9-23, and 29-33 were rejected under 35 U.S.C. 102(b) as being anticipated by Amado (US 5,701,400).

- 13 -

Agent for Applicant respectfully submits that Amado and the present invention are directed at completely different inventions that each serve a different purpose. The two inventions do not overlap, but rather provide complementary systems and methods that may, in fact, be used in conjunction. Furthermore, Amado does not constitute analogous art.

Agent for Applicant submits that Amado is directed towards an "information compiler" system, as reflected in the title of Amado, which is "Method and Apparatus for Applying If-Then-Else Rules to Data Sets in a Relational Data Base and Generating from the Results of Application of Said Rules a Database of Diagnostics Linked to Said Data Sets to Aid Executive Analysis of Financial Data." The term "information compiler" is further described in Amado at column 24, lines 43 through 59, where Amado notes that "The invention could be described as an INFORMATION COMPILER" and that an information compiler is used for "applying logic tests". Therefore, Amado is describing a compilation system which presupposes the existence of appropriate "logic tests". These logic tests could be supplied by Sayad.

Furthermore, Amado at column, 25, lines 8 through 34 notes that the invention is concerned with generating a database of diagnostics from the data and linking the diagnostics to the corresponding data. For example, at column 25, lines 15 through 19, Amado contemplates that "appropriate knowledge logic" must be provided by a source outside the scope of the Amado invention. Again, Amado presupposes the existence of "appropriate knowledge logic" which could be supplied by Sayad.

To summarize, Amado is concerned generally with providing a comprehensive computer implemented system to assist decision making (see Amado at column 20, lines 40 through 43).

In contrast, Sayad is concerned generally with an intelligent learning utility that may be used to make intelligent models that may enable data processing in dynamic situations and large quantities of data. In fact, Sayad proposes that the results of intelligent models could be used for control or diagnostic purposes (see Sayad at paragraph 280). The present direction is not directed at a specific use of the results of implementation of such intelligent models, whereas Amado is clearly directed to specific use of data from multiple sources, including possibly data resulting from implementation of intelligent models not disclosed in Amado. For example, they may just indicate a "red flag" as alluded to by Amado in methods outside the scope of Amado (see Amado at column 20, lines 21 through 32) or they may be used in Amado as diagnostics.

- 14 -

In other words, the way the results of the intelligent models are used for control or diagnostic purposes is beyond the scope of Sayad but is the central topic of Amado.

This difference is illustrated at various points in Amado and Sayad.

Amado emphasizes that, in contrast to decisions defined in terms of data, decisions using Amado are defined in terms of "structured databases of diagnostics" (see Amado at column 20, lines 16 through 19). Sayad does not attempt to provide an "executive information system" (EIS). Rather, results are presented as data. Any decisions are expected to be made from the presented data.

Amado also makes the point that neural nets, genetic algorithms, classifier systems, etc. may be integrated into Amado to "generate diagnostics" needed by Amado (see Amado at column 67, lines 35 through 59, for example). Amado does not, for example, attempt to improve the performance of the neural nets, genetic algorithms, classifier system algorithms themselves. Rather, its emphasis is on using the output of these data analysis methods to obtain diagnostics which can be used together with other diagnostics to provide a comprehensive information picture.

It is noted from all of the above that Amado and Sayad focus on different problems: Sayad is concerned with improving performance of data analysis methods while Amado is concerned with using a variety of diagnostics, some of which may be obtained from data analysis methods, to provide comprehensive information.

The inventions are complementary in that the improved methods obtained by application of the Sayad invention may be used as a source of diagnostics for the Amado invention.

Sayad mentions a list of specific data analysis methods that can be upgraded to intelligent modeling methods from being conventional modeling methods (see Sayad at paragraph 0106). This greatly improves the capability of these methods to provide accurate predictions, especially in dynamic situations involving large quantities of data. The "robust Bayesian classification" method could, for example, be used in Amado (as could any of the methods mentioned in Amado at column 67, lines 35 through 59), to produce much more accurate diagnostics than would otherwise be obtainable in such situations. Note that the list provided by Sayad (at paragraph 106) does not include some of the methods that Amado

- 15 -

mentions (e.g. neural nets, genetic algorithms) since Amado only requires methods to supply diagnostics. However, the present invention has application beyond the specific methods cited in Amado that may have application for providing input to diagnostics. That is, the two inventions are directed at different objectives.

Claims 1, 10, 11, 12, 13, 14, 16, 17, 21

The Examiner stated that Amado anticipates a computer linked to one or more data sources adapted to provide to the computer a plurality of knowledge elements (knowledge elements are synonymous with the rules of a knowledge base); and an analytical engine, linked to or executed by the computer, that is operable to enable intelligent modeling, by the analytical engine applying one or more intelligent characteristics to one or more of the plurality of knowledge elements, the intelligent characteristics including one or more of (i) immediately utilizing new data, (ii) purposefully ignoring certain data, (iii) incorporating new variables, and/or (iv) not using specific variables wherein the analytical engine includes a data management system for accessing and processing the knowledge elements (analytic engine is synonymous with expert system and associated inference engine; such expert system will immediately utilize new data in an if-then rule and through such rule will then ignore, incorporate and/or not use specific variables; Fig. 1 is a DBMS; subdividing is equivalent to distributed data of Fig. 1; combining of the knowledge entities occurs in the application of the if-then rules... similar knowledge entities will have similar rules; prediction is inherent in application of if-then rules... the "if" is the present and the "then" is the prediction; variable reduction occurs with the application of the if-then-rules which would gather similar but slightly different "if" conditions and assign the same "then"... reducing the number of variables; Fig. 1 anticipates a querying engine; the application of if-then rules is synonymous with applying the intelligent modeling to the single knowledge entity).

Agent for Applicant respectfully submits that (i) knowledge elements are not synonymous with the rules of a knowledge base; (ii) the analytic engine is not synonymous with "conventional" expert system and associated inference engine; and (iii) application of if-then rules is not synonymous with applying the intelligent modeling to the single knowledge entity.

(i) Knowledge elements are not synonymous with the rules of a knowledge base

- 16 -

Amado is concerned with how many components are used together to provide an executive information system whereas Sayad is concerned with the development of one or more unique components by means of the specific intelligent modeling technology described. Sayad does not examine how these components are best used together.

This is illustrated in Figure 1 of Amado. Element 6 is composed of several possible components including "Knowledge rules, neural nets, fuzzy logic, GAs".

Sayad could provide one of these components as an intelligent model. Sayad is concerned with the best way of formulating that model. Amado could be used to apply data produced by means of the present invention to create diagnostics then for example use this data in conjunction with the "Querying Engine" as shown in Figure 1 of Amado.

In Figure 2 of Sayad we can see that the output of Sayad is a prediction, as an example. The architecture described by Amado in Figure 1 is completely absent. This becomes even clearer when the "Knowledge Entity" of Figure 3 of Sayad is examined. The summations, etc. shown are clearly not the same as knowledge rules as per Amado. These summations etc. are the building blocks for the Sayad intelligent model. They must be properly utilized by the analytical engine to generate that model.

(ii) The analytic engine is not synonymous with a "conventional" expert system and associated inference engine

The analytic engine is defined by Sayad in a very specific way (see Sayad at paragraph 19 for example). In particular, a conventional data management system is not able to carry out all of the functions demanded by Sayad. Special manipulations of the knowledge elements are part of the requirement.

Throughout the specification, Sayad refers to a "learner", "modeler" and a "predictor". For example in reference to Figure 2 of Sayad, the data management system is a special system tailored to accomplish the needed tasks for the Analytical Engine. It is different in parts, coupling and purpose from the "Executive Information System" (EIS) mentioned by Amado, for example.

(iii) Application of if-then rules is not synonymous with applying the intelligent modeling to the single knowledge entity

- 17 -

Analysis rules are vital to Amado. These rules are tests applied to the data and always result in a "True" or "False" result (see Amado at column 35, lines 30-45).

In Amado, each "true" result is linked to a diagnostic statement in the diagnostic database.

Sayad does not employ such rules. It simply provides the resulting quantities from use of the intelligent model. Someone using Amado with Sayad could attempt to transform the intelligent model obtained by Sayad to a series of rules. However, such attempts would not assist integration of Sayad into Amado. Also, changing the Sayad model in such a way does not mean that it becomes part of Amado any more than rephrasing in terms of rules any of the other methods mentioned (see Amado at column 67, lines 35 through 59, for example) would make them part of the Amado invention.

Therefore, Applicant respectfully submits that claims 1, 10, 11, 12, 13, 14, 16, 17, and 21 are in allowable form.

Claims 2, 22

The Examiner stated that Amado anticipates the analytical engine defining one or more knowledge entities, each of which is comprised of at least one knowledge element (expert system identifies a rule if-then and the knowledge element results from the "then" condition).

Agent for Applicant respectfully submits that the knowledge element does not result from the expert system. Amado defines an expert system in a very general way at column 2, lines 50 through 65. It may be possible to sometimes transform the entire method invented by Sayad (not just the Analytical Engine) into a set of rules. By Amado's definition of an expert system, it may also be possible to then term the Sayad invention as an "unconventional" expert system dedicated to data analysis and prediction for example. However, this still does not result in anticipation by Amado. Amado does not disclose any expert system and certainly does not disclose an expert system implemented using the technology described in Sayad. In fact, Amado provides many examples of commercial expert systems. Rather, it is the integration of expert systems in a computer system in a particular way that is claimed. Sayad does not attempt to specify how his invention should be used in the "macro-system" envisioned by Amado.

- 18 -

Therefore, Applicant respectfully submits that claims 2 and 22 are in allowable form.

Claims 3, 23

The Examiner stated that Amado anticipates the analytical engine adapted to update dynamically the knowledge elements with a plurality of records and a plurality of variables (expert system identifies a rule if-then and the knowledge element results from the "then" condition).

Agent for Applicant respectfully submits that the knowledge element does not result from the expert system. As mentioned above, the definition of the knowledge elements and their updating so as to obtain a model which is continuously and "instantaneously" updated is part of Sayad and not anticipated by Amado.

In examining how often Amado's system is updated, Amado admits to not being able to respond "on-the-fly": Amado contrasts its invention with existing EIS systems providing a few diagnostics on the fly (see Amado at column 26, lines 50 through 67). The Sayad invention, although not an EIS system, provides its information "on the fly". In any event, as detailed above, the Amado and Sayad inventions are dealing with different systems for different purposes.

Therefore, Applicant respectfully submits that claims 3 and 23 are in allowable form.

Claims 9, 29

The Examiner stated that Amado anticipates the analytical engine enabling application to the knowledge entity of one or more of: incremental learning operations, parallel processing operations, scenario testing operations, dimension reduction operations, dynamic query operations or distributed processing operations.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore these aspects of Sayad are not anticipated by Amado. Therefore, Applicant respectfully submits that claims 9 and 29 are in allowable form.

Claim 15

- 19 -

The Examiner stated that Amado anticipates the step of successively applying a series of new variables so as to accomplish further dimension reduction.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore Claim 15 is not anticipated by Amado. Therefore, Applicant respectfully submits that claim 15 is in allowable form.

Claim 18

The Examiner stated that Amado anticipates a) enabling one or more records to be added or removed dynamically to or from the knowledge entity; b) enabling one or more variables to be added or removed dynamically to or from the knowledge entity; c) enabling use in the knowledge entity of one or more qualitative and/or quantitative variables; and d) supporting a plurality of different data analysis methods.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore Sayad is not anticipated by Amado. In addition, Amado does not disclose a "knowledge entity" as disclosed by Sayad in part because no intelligent modelling method is described in Amado, but rather the use of the results of application of such a method. Therefore, Applicant respectfully submits that claim 18 is in allowable form.

Claim 19

The Examiner stated that Amado anticipates the knowledge entity being portable to one or more remote computers.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore Claim 19 is not anticipated. Therefore, Applicant respectfully submits that claim 19 is in allowable form.

Claim 20

The Examiner stated that Amado anticipates the intelligent modeling applied to relevant knowledge elements enables one or more of: a) credit scoring; b) predicting portfolio value

from market conditions and other relevant data; c) credit card fraud detection based on credit card usage data and other relevant data; d) process control based on data inputs from one or more process monitoring devices and other relevant data; e) consumer response analysis based on consumer survey data; f) health care diagnosis based on patient history data, patient diagnosis best practices data, and other relevant data; g) security analyis predicting the identity of a subject from biometric measurement data and other releveant data; h) inventory control analysis based on customer behaviour data, economic conditions and other relevant data; i) sales prediction analysis based on previous sales, economic conditions and other relevant data; j) computer game processing whereby the game strategy is dicatated by the previous moves of one or more other playters and relevant data; k) robot control whereby the movements of a robot are controlled based on robot monitoring data and other relevant data; and l) a customized travel analysis whereby the favourite destination of a customer is predicted based on previous behaviour and other relevant data.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above. Therefore, Applicant respectfully submits that claim 20 is in allowable form.

Claim 30

The Examiner stated that Amado anticipates the analytical engine enabling process control.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore claim 30 is not anticipated by Amado. Therefore, Applicant respectfully submits that claim 30 is in allowable form.

Claim 31

The Examiner stated that Amado anticipates the analytical engine enabling fault diagnosis.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore

claim 31 is not anticipated by Amado. Therefore, Applicant respectfully submits that claim 31 is in allowable form.

Claim 32

The Examiner stated that Amado anticipates the method implemented in a digital signal processor chip or any miniaturized processor medium.

Agent for Applicant respectfully submits that the Amado and Sayad inventions are directed toward different systems for different purposes, as explained above, and therefore claim 32 is not anticipated by Amado. Therefore, Applicant respectfully submits that claim 32 is in allowable form.

CONCLUSION:

In view of the foregoing amendments and remarks, the application is believed to be in condition for allowance and a notice to that effect is respectfully requested.

Should the Examiner not find the application to be in allowable condition or believe that a conference call would be of value in expediting the prosecution of the application, Applicant requests that the Examiner telephone the undersigned Counsel to discuss the case.

Applicant requests an opportunity to submit any Supplemental Amendment that might advance prosecution and place the application in allowable condition.

Yours faithfully,

Eugene Gierczak/adf

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- 23 -